

Stiefel Dairy

ATTACHMENT G

Order No. R9-2005-0095

NPDES Permit NO. CA0109011

WASTEWATER STORAGE REQUIREMENTS

Lagoon Volume Calculations

Current facility capacity = 32.6 acre-feet

Total permitted number of milking cows = 1,500

Estimated volume of wastewater per day for each milking cow = 50 gpd

Arcerage of production area of facility = 23

24-hour, 25-year storm event = 4.01 inches

Volume of storm water generated

Assuming 100 percent runoff (0 percent permeability) from a 23 acre production area:

23 acres = 1,001,884 sq. ft.

4.01 inches of rain over 1,001,884 sq. ft results in a storm water volume of 334,796 cubic feet.

12 inches / 4.01 inches = conversion factor of 2.99

1,001,884 sq. ft. / 2.99 = 334,796 cubic ft.

334,796 cubic ft. * 7.479 (conversion factor: cubic ft. to gallons) = 2,503,941 gallons

2,503,941 gallons / 325,851 (conversion factor: gallons to acre-ft.) = **7.68 acre-ft.**

The volume of 24-hour, 25-year storm event over the 23 acre production area results in a storm water volume of **7.68 acre-ft.**

Volume of wastewater generated

50 gallons X 1,500 cows = 75,000 gallons

75,000 gallons X 60-days = 4,500,000 gallons

4,500,000 gallons / 325,851 = **13.8 acre-ft.**

13.8 acre-ft. are needed to hold the wastewater generated over 60 days at this facility.

Total Volume of wastewater generated on-site and 100 percent storm water runoff

7.68 acre-ft. (Storm water volume) + 13.8 acre-ft (60 day daily production wastewater) = **21.48 acre-ft.**

The facility has 32.6 acre-ft. capacity.

The facility is required to have a minimum capacity of 21.48 acre -ft.

The facility has sufficient lagoon storage volume.